

**REMARKS****Summary of the Office Action**

Claims 1-10 stand rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the written description requirement.

Claims 1-3, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Gaalema (U.S. Patent No.: 4,507,674) (hereinafter "Gaalema").

Claims 4-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Yutaka et al. (JP 3-104287) (hereinafter "Yutaka").

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Fujii et al (U.S. Patent No.: 6,933,489) (hereinafter "Fujii").

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Nunogaki et al (U.S. Patent No. 5,602,384) (hereinafter "Nunogaki").

**Summary of the Response to the Office Action**

Applicant has amended claim 1 to incorporate features of previous dependent claims 4 and 5. Accordingly, claims 4 and 5 are hereby canceled without prejudice or disclaimer. Also, the dependency of claim 6 has thus been amended to now depend from newly-amended independent claim 1. In addition, Applicant has amended independent claim 1 to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claims. Accordingly, claims 1, 3 and 6-20 remain currently pending with claims 1, 3 and 6-10 currently under consideration and claims 11-20 currently withdrawn from consideration.

**Rejection under 35 U.S.C. § 112, first paragraph**

Claims 1-10 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Claim 2 should not have been included in this rejection because it was not pending at the time of issuance of the Final Office Action.

Withdrawal of this rejection of claim 2 is respectfully requested. Applicant has amended independent claim 1 to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claim by describing that the first electrode includes a contact electrode and an electrode part. See, for example, Fig. 2 showing first electrode 21 which is comprised of a contact electrode 23 and an electrode part 25a. Independent claim 1 has further been amended to describe that “the contact electrode is formed on a front face of the photodetecting region and is electrically connected to the photodetecting region.” Even further, independent claim 1 has been amended to describe that “the electrode part of the first electrode electrically connects the first electrode to the second electrode through the wiring electrode arranged within the depression.” Applicant respectfully submits that a surface of the first electrode 21 is not flat, but instead has projection portions 25a and a depression portion located between the projection portions. Applicant respectfully submits that independent claim 1, as amended, fully complies with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. § 112, second paragraph be withdrawn.

**Information Disclosure Statement Issue**

The Examiner makes particular assertions at pages 2-3 of the Final Office Action with regard to the Information Disclosure Statement (“IDS”) previously-filed in this application on

August 5, 2008. Applicant appreciates the Examiner's consideration of the reference submitted with the IDS on August 5, 2008, as indicated by the Examiner-initialed version of the PTO Form 1449 from the August 5, 2008 IDS as attached to the Final Office Action dated January 6, 2009. In addition, Applicants submitted a copy of a Chinese Office Action that issued on May 9, 2008 in a Chinese patent application with the IDS previously-filed on August 5, 2008 for consideration by the Examiner. Applicants understand that it is not necessary to list the Chinese Office Action dated May 9, 2008 itself on the PTO Form 1449 in order to comply with the Duty of Disclosure. In other words, Applicants understand that they have complied with the Duty of Disclosure with regard to the Chinese Office Action by attaching a copy of the Chinese Office Action to the IDS and referring to the Chinese Office Action within the body of the IDS papers, as previously-filed on August 5, 2008.

**Rejections under 35 U.S.C. §§ 102(b) and 103(a)**

Claims 1-3, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Gaalema. Claims 4-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Yutaka. Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Fujii. Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Gaalema and further in view of Nunogaki.

Claim 2 should not have been included in this rejection because it was not pending at the time of issuance of the Final Office Action. Withdrawal of this rejection of claim 2 is respectfully requested. Applicant has amended claim 1 to incorporate features of previous dependent claims 4 and 5. Accordingly, claims 4 and 5 are hereby canceled without prejudice or disclaimer. Also, the dependency of claim 6 has thus been amended to now depend from newly-

amended independent claim 1. In addition, Applicant has amended independent claim 1 to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claims.

Accordingly, Applicant respectfully submits that newly-amended independent claim 1 of the instant application describes an advantageous combination of features including a depression portion (see, for example 12 in Fig. 2) formed about a photodetecting region (see, for example 11 in Fig. 2). Applicant respectfully submits that in this arrangement, a region including a high concentration layer (see, for example 3a in Fig. 2), a light absorbing layer (see, for example 5a in Fig. 2), a cap layer (see, for example 7a in Fig. 2) and a photodetecting region (see, for example 9 in Fig. 2) is separated from a peripheral semiconductor layer. Therefore, Applicant respectfully submits that a parasitic capacitance may be suppressed and, as a result, a high speed drive element may be realized. Further, Applicant respectfully submits that a wiring electrode formed in the depression portion (see, for example 12 in Fig. 2) may be realized as a part of the penetration electrode and, as a result, the penetration electrode may be easily formed.

On the contrary, Applicant respectfully submits that in Gaalema, it is apparent from Fig. 4 that a depression (28) provided at a compound semiconductor layer is not formed around a radiation-ray detecting region 19.

Further, Applicant respectfully submits that newly-amended independent claim 1 of the instant application describes an advantageous combination of features including a photo-detector device utilizing a pn-junction (the first conductive type cap layer, photo-absorbing layer, high-concentration carrier layer and the second conductive type photodetecting region). On the contrary, Applicant respectfully submits that the arrangement disclosed in Gaalema is a light receiving device utilizing a photoconductivity effect.

In other words, Applicant respectfully submits that in a pn-junction type photo-detecting device, as in the instant application's invention, a parasitic capacitance caused in the p-n junction portion decreases a driving speed of the device. However, in the light receiving device utilizing a photoconductivity effect as in Gaalema, as shown in Fig. 1, there is no resultant problem with regard to the decrease of the driving speed of the device caused by a parasitic capacitance because in the device of Gaalema a potential difference between detection contacts (22 and 19) which are provided so as to sandwich the n-conductive detecting layer 18 is detected.

Accordingly, Applicant respectfully submits that Gaalema does not disclose, or even suggest, the provision of a depression portion so as to surround the photo-detecting region 11. Even further, Applicant respectfully submits that Gaalema does not disclose, nor even suggest, the provision of an electrode within the depression portion 12.

In addition, Applicant respectfully submits that none of the additionally applied references to Yutaka, Fujii and Nunogaki disclose, or even suggest, the provision of a depression structure surrounding a photo-detecting portion.

Accordingly, Applicant respectfully asserts that the rejections under 35 U.S.C. §§ 102(b) and 103(a) should be withdrawn because the applied art of record, including Gaalema, Yutaka, Fujii and Nunogaki, whether taken separately or combined, does not teach or suggest each feature of independent claim 1 of the instant application as newly-amended. As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)." Also, as pointed out by MPEP

§ 2143.03, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.’ In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).”

Furthermore, Applicant respectfully asserts that the dependent claims 3 and 6-10 are allowable at least because of their dependence from independent claim 1, and the reasons discussed previously. With regard to the additionally applied reference to Yutaka with regard to dependent claim 6, Applicant respectfully submits that this additionally applied reference does not cure the deficiencies discussed previously with regard to Gaalema. With regard to the additionally applied reference to Fujii with regard to dependent claim 7, Applicant respectfully submits that this additionally applied reference does not cure the deficiencies discussed previously with regard to Gaalema. With regard to the additionally applied reference to Nunogaki with regard to dependent claim 10, Applicant respectfully submits that this additionally applied reference does not cure the deficiencies discussed previously with regard to Gaalema.

### **CONCLUSION**

In view of the foregoing discussion, Applicant respectfully requests the entry of the amendments to place the application in clear condition for allowance or, in the alternative, in better form for appeal. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant’s undersigned representative to expedite prosecution. A favorable action is awaited.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

**DRINKER BIDDLE & REATH LLP**

Dated: April 6, 2009

By:

A handwritten signature in black ink, appearing to read "Paul A. Fournier", is written over a horizontal line.

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